

CLAIM AMENDMENTS

1-21. (Canceled)

22. (Currently Amended) A method, comprising:

a) providing:

i) a reaction vessel configured with an aspect ratio of at least 3.3, wherein said ratio is defined as vessel height divided by vessel diameter,

ii) a heat source contacting said bottom of said reaction vessel;

iii) a cooling means contacting said top of said reaction vessel, wherein said cooling means is selected from the group consisting of a water bath and a refrigeration device; and,

iv) a solution comprising a plurality of reactants;

b) introducing said solution into said vessel; and,

c) creating at least one convection cell comprising a temperature differential by applying heat to said bottom of said vessel with said heat source and cooling said top of said vessel with said cooling means under such conditions that said plurality of reactants are thermocycled within said solution, thereby forming a reactant product.

23. (Original) The reaction vessel of Claim 22, wherein in cross section the reaction vessel is without corners.

24. (Original) The reaction vessel of Claim 22, wherein in cross section the reaction vessel is with corners.

25. (Original) The method of Claim 22, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

26. (Canceled)
27. (Previously Presented) The method of Claim 22, wherein products comprise amplified nucleic acid.
28. (Original) The method of Claim 22, wherein said reaction vessel comprises material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.
29. (Original) The method of Claim 22, wherein said reaction vessel is part of an array.
30. (Currently Amended) The method of Claim 22, wherein [[a]] said temperature differential of at least 10°C is established within said convection cell.
31. (Original) The method of Claim 22 further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.
32. (New) A method, comprising:
- a) providing:
 - i) a reaction vessel comprising a top and a bottom;
 - ii) a heat source contacting said bottom of said reaction vessel;
 - iii) an active cooling means contacting said top of said reaction vessel, wherein said cooling means is selected from the group consisting of a water bath and a refrigeration device; and
 - iv) a solution comprising a plurality of nucleic acids comprising a target and a primer substantially homologous to at least a portion of said target;
 - b) introducing said solution into said vessel; and
 - c) thermocycling said solution by applying heat to said bottom of said vessel with said heat source and cooling said top of said vessel with said cooling means under such conditions that said nucleic acids form an amplified nucleic acid.

35. (New) The method of Claim 33, wherein said reaction vessel comprises at least one material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.
36. (New) The method of Claim 32, wherein said reaction vessel is part of an array.
37. (New) The method of Claim 32, wherein a temperature differential of at least 5°C is established between said top surface and said bottom surface.
38. (New) The method of Claim 32, also providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.
39. (New) A method, comprising:
- a) providing:
 - i) a reaction vessel comprising a top and a bottom;
 - ii) a heat source contacting said bottom of said reaction vessel;
 - iii) an active cooling means contacting said top of said reaction vessel, wherein said cooling means is selected from the group consisting of a water bath and a refrigeration device; and
 - iv) a solution comprising a plurality of reactants;
 - b) introducing said solution into said vessel; and,
 - c) creating at least one convection cell comprising a temperature differential by applying heat to said bottom of said vessel with said heat source and cooling said top of said vessel with said cooling means under such conditions that said reactants are thermocycled, thereby forming a reaction product.
40. (New) The method of Claim 1, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

41. (New) The method of Claim 40, wherein said reaction product comprises amplified nucleic acid.
42. (New) The method of Claim 41, wherein said reaction vessel comprises at least one material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.
43. (New) The method of Claim 41, wherein said reaction vessel is part of an array.
44. (New) The method of Claim 41, wherein said temperature differential is at least 5°C.
45. (New) The method of Claim 41, wherein said temperature differential is at least 10°C.
46. (New) The method of Claim 41, also providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.
47. (New) A method, comprising:
- a) providing:
 - i) a reaction vessel comprising a top and a bottom;
 - ii) a heat source contacting said bottom of said reaction vessel, and
 - iii) a solution comprising a plurality of reactants;
 - b) introducing said solution into said vessel; and,
 - c) creating at least one convection cell comprising a temperature differential by applying heat to said bottom of said vessel with said heat source under conditions such that said reactants are thermocycled, thereby forming a reactant product.

48. (New) The method of Claim 47, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

49. (New) The method of Claim 47 wherein said reactant products comprise amplified nucleic acid.

50. (New) The method of Claim 47, wherein said reaction vessel comprises material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

51. (New) The method of Claim 48, wherein said reaction vessel is part of an array.

52. (New) The method of Claim 49, wherein said temperature differential is at least 5°C.

53. (New) The method of Claim 49, wherein said temperature differential is at least 10°C.

54. (New) The method of Claim 49, further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.